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10/584,161	03/29/2007	Juergen Eberle	2003P01969WOUS	5081

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BSH HOME APPLIANCES CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
100 BOSCH BOULEVARD
NEW BERN, NC 28562

EXAMINER

KOAGEL, JONATHAN BRYAN

ART UNIT	PAPER NUMBER
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3744

NOTIFICATION DATE	DELIVERY MODE
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06/03/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/584,161	Applicant(s) EBERLE ET AL.	
	Examiner JONATHAN KOAGEL	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-10 and 12-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-10, 12-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation "the suction tube being welded to the first and second portions at a second soldering joint" (lines 4-5) is unclear to how the suction tube is welded to itself, since the suction tube includes a first and a second portion. For purposes of this examination, as best understood from the drawing, the suction tube is being welded to the throttling tube at a second soldering joint.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-10 and 12-14, 19, 20, 22, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Electrogerate FR Publication No. 1,516,944 and further in view of Dobson et al. US Publication No. 2002/0184911 A1.

Regarding claim 7, Electrogerate teaches in fig. 11, a refrigerating unit comprising a suction tube 41, 42 and a throttling tube 43 which runs at least over a part

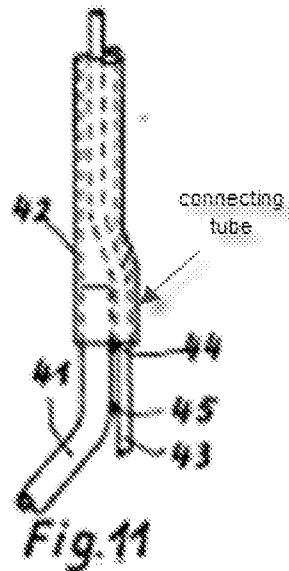
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of its length inside the suction tube 41, 42 and is guided out from the suction tube 41, 42 to form a first outlet location 44 wherein the throttling tube 43 and the suction tube 41, 42 are joined to one another at a second location 45 of the suction tube 41, 42 at which outer surfaces of the throttling tube 43 and the suction tube 41, 42 are in contact, wherein the outer surfaces of the throttling tube 43 and the suction tube 41, 42 are joined to one another at the second location 45 by welding (pg. 4 paragraph 7).

Electrogerate does not explicitly teach where the weld at the second location is an ultrasound weld.

However, Dobson teaches the functional equivalence of a number of means for bonding, including ultrasound welding, tubes of an accumulator in an air conditioning system (paragraph 48 lines 1-8). Ultrasonic welding is particularly advantageous because it is well known in the art to be a fast method of adhering elements with a short drying time.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Electrogerate with the teachings of Dobson to include ultrasound welding in order to provide an adhering method that is much faster than conventional adhesives or solvents. The fast drying time prevents the adhered pieces from remaining in a jig for a long period of time, waiting for the joint to dry or cure. This welding type is also easily automated, making clean and precise joints.



Regarding claim 8, Electrogerate as modified above teaches the invention as disclosed and further teaches in fig. 11 that the first and second locations, 44 and 45 are spaced apart at a distance. Electrogerate fails to explicitly teach where the second location is spaced apart from the first location at a range of 5mm to 20mm. Since Electrogerate discloses according to figure 11, a distance between the first location and the second location, this distance is recognized as a result effective variable, i.e. a variable which achieves a recognized result. In this case the recognized result is that with this distance between the first and second locations, the throttling tube has less of a chance of becoming damaged during an installation process. This specific distance of 5-20mm will increase the rigidity of the throttling tube, which will prevent damage to the tubes by over flexing during an installation process. Therefore, since the general

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condition of the claim, i.e. that there is a distance between the first and second locations, was disclosed in the prior art by Electrogerate, it is not inventive to discover the optimum workable range by routine experimentation and it would be obvious to one of ordinary skill in the art at the time of invention to provide the tube as disclosed by Electrogerate with a distance of 5-20mm between the first and second location.

Regarding claim 9, Electrogerate as modified above teaches the invention as disclosed and further teaches in fig. 11 wherein the second location 45 is located downstream from the outlet location 44 with reference to the refrigerant flowing in the suction tube 41, 42.

Regarding claim 10, Electrogerate as modified above teaches the invention as disclosed and further teaches in fig. 11, wherein the outlet location 44 is provided at a connecting tube (see annotated figure above) on which both the suction tube 41, 42 and the throttling tube 43 are fixed downstream in a liquid and gastight manner (pg. 4 paragraph 7). Electrogerate discloses that the tubes are brazed and welded at the locations 44 and 45. Therefore, the tubes are fixed in a liquid and gastight manner. From figure 11, the outer wall of tubes 41 and 43 are in contact with the inner wall of tube 42 (indicated by a dashed line). Since both tubes 41 and 43 are in contact with the inner wall (dashed line) they are considered to be fixed in a liquid and gastight manner. A person of ordinary skill in the art would have known to fix the suction tube and the throttling tube downstream in a liquid and gastight manner so that refrigerant does not

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leak out of the refrigerating unit and into the surrounding environment. Refrigerants can be toxic, and can contaminate the surrounding area of the refrigerating unit, creating a dangerous health environment to a person near the unit.

Regarding claim 12, Electrogerate teaches in fig. 11, a method for joining a suction tube of a refrigerating unit to a throttling tube comprising the following acts, guiding the throttling tube 43 out from the inside of the suction at an outlet location 44 of the suction tube 41, 42, joining the suction tube 41, 42 and the throttling tube 43 at the outlet location, bringing in contact an outer surface of a portion of the throttling tube 43 located outside the suction tube 41, 42 with an outer surface of the suction tube 41, 42 at a second location 45 of the suction tube 41, 42, joining the suction tube 41, 42 and the throttling tube 43 at the second location 45, joining the outer surfaces of the suction tube 41, 42 and the throttling tube 43 to one another at the second location 45 by welding (pg. 4 paragraph 7). Regarding the joining of the suction tube and the throttling tube at the outlet location by soldering, Electrogerate teaches an equivalent technique of brazing which allows both the tubes to become joined together by the use of a filler metal which melts and creates a sealed joint. Both brazing and soldering use a filler metal that melts and creates a sealed joint without the melting of the surfaces that are being joined. Electrogerate fails to explicitly teach the use of ultra sound welding.

However, Dobson teaches the functional equivalence for a number of means of bonding, including ultrasound welding tubes of an accumulator in an air conditioning system (paragraph 48 lines 1-8). Ultrasonic welding is particularly advantageous

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because it is well known in the art to be a fast method of adhering elements with a short drying time.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Electrogerate with the teachings of Dobson to include ultrasound welding in order to provide an adhering method that is much faster than conventional adhesives or solvents. The fast drying time prevents the adhered pieces from remaining in a jig for a long period of time, waiting for the joint to dry or cure. This welding type is also easily automated, making clean and precise joints.

Regarding claim 13, Electrogerate as modified above teaches the invention as disclosed and further teaches in fig. 11 that the first and second locations, 44 and 45 are spaced apart at a distance. Electrogerate fails to explicitly teach where the second location is spaced apart from the first location at a range of 5mm to 10mm. Since Electrogerate discloses according to figure 11, a distance between the first location and the second location, this distance is recognized as a result effective variable, i.e. a variable which achieves a recognized result. In this case the recognized result is that with this distance between the first and second locations, the throttling tube has less of a chance of becoming damaged during an installation process. This specific distance of 5-10mm will increase the rigidity of the throttling tube, which will prevent damage to the tubes by over flexing during an installation process. Therefore, since the general condition of the claim, i.e. that there is a distance between the first and second locations, was disclosed in the prior art by Electrogerate, it is not inventive to discover

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the optimum workable range by routine experimentation and it would be obvious to one of ordinary skill in the art at the time of invention to provide the tube as disclosed by Electrogerate with a distance of 5-10mm between the first and second location.

Regarding claims 14 and 22, Electrogerate as modified above teaches the invention as disclosed and Electrogerate further teaches in fig. 11, the suction tube 41, 42 and the throttling tube 43 are made of metal materials. It is implicitly taught that the suction tube and throttling tube are made of metal materials, as refrigeration system use metal piping such as copper to carry the refrigerant throughout the system. Furthermore, the applicant admits on page 3 of the arguments that Electrogerate teaches that the suction and throttling tube are usually made of metal materials.

Regarding claims 19 and 26, Electrogerate as modified above teaches the invention as disclosed and Electrogerate further teaches in fig. 11, the suction tube 41, 42 has a specific diameter and the throttling tube 43 has a specific diameter. Electrogerate fails to explicitly teach the suction tube has a diameter of a few millimeters and the throttling tube has a diameter of fractions of a millimeter. Since Electrogerate discloses according to figure 11, a specific diameter of both the suction and throttling tube, this diameter is recognized as a result effective variable, i.e. a variable which achieves a recognized result. In this case the recognized result is that with this diameter of the suction and throttling tube, the tubes will have a lower manufacturing cost, since less material will be needed to make the tubes. This specific diameter of a few

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millimeters of the suction tube and fractions of a millimeter of the throttling tube will decrease the overall cost of the refrigeration system. Therefore, since the general condition of the claim, i.e. that a specific diameter of both the suction and throttling tube, was disclosed in the prior art by Electrogerate, it is not inventive to discover the optimum workable value by routine experimentation and it would be obvious to one of ordinary skill in the art at the time of invention to provide the tubes as disclosed by Electrogerate with a diameter of a few millimeters and fractions of a millimeter.

Regarding claims 20 and 27, Electrogerate as modified above teaches the invention as disclosed and Electrogerate further teaches in fig. 11, each of the suction tube 41, 42 and the throttling tube 43 has an interior diameter surface defining a passage for refrigerant, and an outer diameter surface which together defines a wall thickness therebetween, the suction tube and the throttling tube being aligned in side by side relation such that their longitudinal axes are substantially parallel, whereby at least along a portion 45 of the lengths thereof, the welded joint is located at said portion to weld the outer diameter surface of the throttling tube 43 to the outer diameter surface of the suction tube 41, 43. Once Electrogerate is modified by Dobson, an ultrasonic weld will be located at said portion 45 to weld the outer diameter surface of the throttling tube to the outer diameter surface of the suction tube, Since Dobson was used to teach the technique of ultrasonic welding.

Claims 14, 15, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Electrogerate and Dobson as applied to claims 7 and 12 above, and further in view of Gelbard et al. US Patent No. 4,147,037.

Regarding claims 14 and 22, Electrogerate as modified above teaches the invention as disclosed and further teaches in fig. 11, wherein the suction tube 41, 42 and the throttling tube 43 are made of metal materials. However, assuming *arguendo* that the applicant disagrees that the metal materials are disclosed, Gelbard teaches a refrigeration system with a suction tube and a throttling tube that are made of metal materials (column 1 lines 42-59). By making the suction tube and throttling tube out of metal materials rather than a polymer or plastic material, the lifespan of the tubes will be increased, as metal is a well known material that can handle extreme hot and cold temperatures and thermal expansion and contraction without damage being caused to the tubes.

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the combined teachings of Electrogerate and Dobson with the teachings of Gelbard to include a suction tube and a throttling tube that are made of metal materials in order to increase the lifespan of the suction and throttling tubes, resulting in lower maintenance costs of the refrigeration system. The metal material will be able to withstand the extreme hot and cold temperature within the refrigeration system from the refrigerant as well as withstand thermal expansion and contraction without damage being caused to the suction and throttling tube.

Regarding claims 15 and 23, Electrogerate as modified above teaches the invention as disclosed and Gelbard further teaches the metal materials (for the suction and throttling tube) include copper (column 1 line 68-column 2 line 3).

Claims 16-18, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Electrogerate and Dobson as applied to claims 7 and 12 above, and further in view of Bitter et al. US Patent No. 5,269,158.

Regarding claim 16, Electrogerate as modified above teaches the invention as disclosed and Electrogerate further teaches in fig. 11, the suction tube 41, 42 and the throttling tube 43 are fixed at the first outlet location 44. Electrogerate as modified fails to explicitly teach the tubes being fixed at the first outlet location by a soldering joint.

Bitter teaches in fig. 1, the technique of attaching refrigerant tubing 10 to an evaporator 1 by using a soldering joint 16. The use of soldering is well known in the art and has the advantage of a low cost, high strength joint that will not cause the surfaces being joined together to melt, as soldering is not an intense high heat process.

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the combined teachings of Electrogerate and Dobson with the teachings of Bitter to include the technique of soldering, that would allow the tubes to be fixed at the first outlet location with a soldering joint in order to lower the costs of manufacturing of the refrigeration system, as soldering is a low cost and efficient process that can be used to connect refrigerant tubing together. Furthermore,

soldering will prevent burn through damage to the refrigerant tubing during the manufacturing process, as soldering does not require extreme heat.

Regarding claims 17 and 24, Electrogerate as modified above teaches the invention as disclosed but fails to explicitly teach an evaporator having a refrigerant tube into which the throttling tube is inserted.

Bitter teaches in fig. 4, an evaporator 1 having a refrigerant tube 2 into which a throttling tube 7 is inserted. Allowing the throttling tube to be inserted into the refrigerant tube directly in the evaporator will increase the efficiency of the evaporator, as refrigerant is expanded and discharged immediately into the evaporator. Heat losses will be at a minimum, since the cold refrigerant is not passing through additional piping before entering the evaporator.

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the combined teachings of Electrogerate and Dobson with the teachings of Bitter to include an evaporator having a refrigerant tube into which the throttling tube is inserted in order to increase the efficiency of the refrigeration system, as expanded refrigerant is immediately discharged into the evaporator, allowing the temperature of the evaporator to be lower. This will allow the system to be used in applications where high heat loads are constantly in demand.

Regarding claims 18 and 25, Electrogerate as modified above teaches the invention as disclosed and Bitter further teaches in fig. 4, a connecting section 4 into

which the refrigerant from the refrigerant tube 2 may be discharged and through which the throttling tube 7 is guided and positioned.

Claims 21 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Electrogerate and Dobson as applied to claims 7 and 12 above, and further in view of Nocivelli EP Publication No. 0788860 A1 and Bitter.

Regarding claims 21 and 28, Electrogerate as modified above teaches the invention as disclose and Electrogerate further teaches in fig. 11, the suction tube 41, 42 includes first and second portions 41, 42, the first portion 41 being inserted into the second portion 42 to define an overlapping portion, the overlapping portion between the first and second portions being joined. Electrogerate as modified by Dobson fails to explicitly teach the overlapping portion between the first and second portions being joined by a first soldering joint and the suction tube being welded to the throttling tube at a second soldering joint.

Nocivelli teaches in fig. 5, a first portion 3' of a suction tube being inserted into a second portion (See annotated figure below) of the suction tube, an overlapping portion (See annotated figure below), the overlapping portion between the first and second portions being joined by a first joint (see annotated figure below) and the suction tube being joined to a throttling tube 5 at a second joint (see annotated figure).

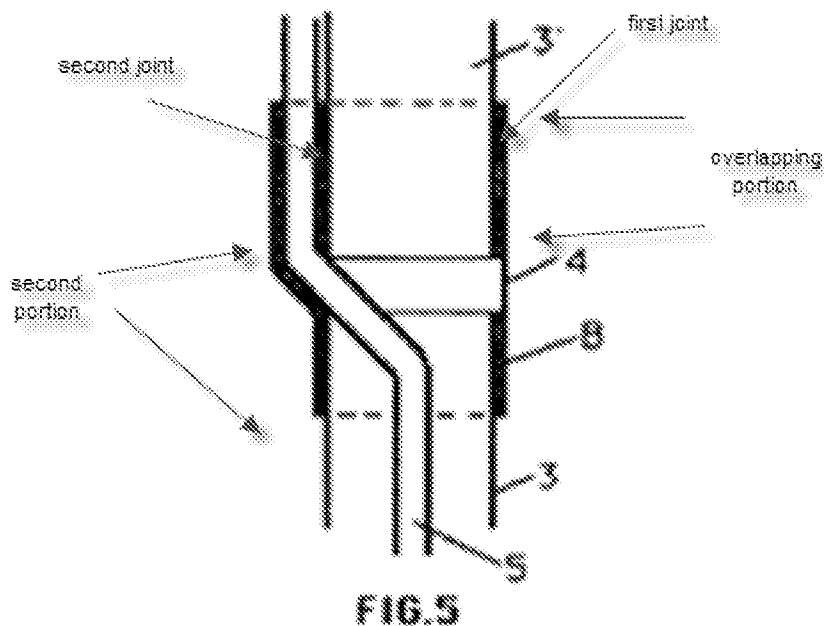
It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the combined teachings of Electrogerate and Dobson with the teachings of Nocivelli to include an overlapping portion between the first and second

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portions being joined by a first joint and the suction tube being joined to the throttling tube at a second joint in order to increase the rigidity of the refrigerant tubing assembly. By adding the first and second joints, the tubes will become more rigid, preventing the tubing assembly from becoming damaged during installation of the tubing into the refrigeration system. Electrogerate as modified by Dobson and Nocivelli fails to explicitly teach the first and second joint are soldering joints.

Bitter teaches in fig. 1, the technique of attaching refrigerant tubing 10 to an evaporator 1 by using a soldering joint 16. The use of a soldering is well known in the art and has the advantage of a low cost, high strength joint that will not cause the surfaces being joined together to melt, as soldering is not an intense high heat process.

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the combined teachings of Electrogerate, Dobson and Nocivelli with the teachings of Bitter to include the technique of soldering, that would allow the first and second portions to be joined by a first soldering joint and the suction tube being welded to the throttling tube at a second soldering joint in order to lower the costs of manufacturing of the refrigeration system, as soldering is a low cost and efficient process that can be used to connect refrigerant tubing together. Furthermore, soldering will prevent burn through damage to the refrigerant tubing during the manufacturing process, as soldering does not require extreme heat.



Response to Arguments

Applicant's arguments filed 2/10/10 have been fully considered but they are not persuasive.

In response to the applicant's argument regarding the combination of the Electrograte and Dobson references and having no reason why one of ordinary skill in the art would have adopted the teachings of Dobson, the examiner respectfully disagrees. Electrograte teaches most of the limitations except the teachings of ultrasonic welding. Dobson is teaching the joining of tubes by means of ultrasonic welding where Dobson was solely used to show why a person of ordinary skill in the art at the time of invention would want to use the technique of ultrasonic welding, which

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was in order to provide an adhering method that is much faster than conventional adhesives of solvents. The fast drying time prevents the adhered pieces from remaining in a jig for a long period of time, waiting for the joint to dry or cure. This welding type is also easily automated, making clean and precise joints. Furthermore, Dobson discloses in paragraph 52 that the u-tube can be a metal u-tube so as to not limit only the use of a plastic u-tube, and therefore Dobson is teaching the technique of ultrasonic welding of metal. The grounds of rejection have been deemed proper and still remain on claims 7 and 12.

In response to the applicant's argument regarding Dobson not teaching or suggesting the ultrasonic welding of two tubes, i.e. a suction tube and a throttling tube, the examiner has applied the teaching of ultrasonic welding which is disclosed by Dobson, to the suction tube and throttling tube of Electrogerate, which would replace the brazed induction with an ultrasonic weld, for the advantageous reasoning above. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant's arguments with respect to claims 14, 15 and 16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN KOAGEL whose telephone number is (571)270-7396. The examiner can normally be reached on Monday through Friday 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571)272-4834 or Frantz Jules (571)272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/J. K./
Examiner, Art Unit 3744
21 May 2010

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art
Unit 3744